

PEPPER (W<sup>1895</sup>)

# DANIEL DRAKE:

OR, THEN AND NOW.

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The Address in Medicine delivered before the Mississippi Valley  
Medical Association, Detroit, Mich., Sept. 4, 1895.

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BY WILLIAM PEPPER, M.D., LL.D.  
PHILADELPHIA, PA.

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*Mr. President and Gentlemen, Members of the Mississippi Valley Medical Association:*—As I left Jersey City and traveled in twenty-four hours to this beautiful city, the place of your meeting this year, it was impossible that my thoughts should not have turned to the strangely different journey, taken in his infancy over this same route, more than one hundred years ago, by one who was destined to play so prominent and so honorable a part in the life of the Mississippi Valley during the ensuing sixty-five years.

Dr. Daniel Drake, to whose life-work I beg to invite your attention this evening, was born in New Jersey, of humble parentage, on Oct. 20, 1785; and in the latter part of the spring of 1788 his parents removed to Kentucky. Taking Daniel and his baby sister Elizabeth, and an unmarried sister of Mrs. Drake, with all their worldly goods, in one Jersey wagon, the journey was made over the Alleghenies to Fort Pitt; and then in a boat crowded with other families, and accompanied by similar boats for fear of Indians, to Maysville. More than sixty years afterward, Dr. Drake gave (in a series of reminiscential letters addressed to his children) an account of the toils and hardships and dangers endured by that pioneer family for the ensuing twelve years, until as a lad of 15 years of age, he was sent himself to study medicine under Dr. Goforth at Cincinnati. I can point to no work in which a more vivid and life-like picture is given of a primitive condition of society, and in which, at the same time, the author reveals with such frankness and fullness his own character and individuality. It is not surprising that all who knew Dr. Drake, at every stage of his life, should

have concurred in unanimous testimony to the lofty and at the same time attractive qualities of his nature. It is a long time since I first began to study his works, and I think I may safely say I have read all that he ever wrote for publication, and nearly all of the many publications concerning him which appeared after his death. Whence it is that some gifted persons acquire their rare charm of literary style, it were idle to inquire. To Drake, it was the gift of nature, the power of expressing in pure and flowing and brilliant language the lofty ideals, the clear thoughts, the graceful fancies of his ardent nature and his powerful mind. His childhood was spent in the ceaseless labor of the farm; but through it all, Nature spoke to him as to a favorite son, and opened his eyes to her infinite charms and inspired him with a love for herself which never lost its ardor. It was this which sustained him through a long life, into which were crowded far more than an usual number of severe trials and disappointments, and kept his spirit to the end as fresh and buoyant and enthusiastic as a boy's. There come readily with this true love of nature those precious things of life—the power to appreciate purity and nobility in humanity; the power to form and to sustain lofty ideals; and the power to scorn petty groveling ways and to pursue the chosen higher path. This was eminently true of Drake. His character is known to us with a rare fullness, and yet there does not appear in it a single vice. He was ambitious; but his aims were never selfish or personal. His proper self-respect was untainted with vanity. His desire for office was to secure larger opportunities for public service. Money had no attraction for him, save to promote scientific investigation and to discharge his obligations. He was familiar with the pinching grip of poverty; he longed for the larger opportunities of study and action which wealth would give; at one time he entered almost recklessly into commercial operations which involved him in financial disaster; he accepted the load



of debt with cheerful courage, and eventually paid every creditor in full. And yet he never allowed himself to pursue his profession as a mere money-making calling, but resolutely devoted a large part of his talents, time and strength to the advancement of education and science.

It may seem to you that it were more fitting, had an address upon the character and work of Daniel Drake been delivered in Cincinnati, with whose institutions his memory is most intimately associated. But when we consider that this is distinctly a gathering of the medical men of the Mississippi Valley, and when we reflect upon the colossal work which Drake achieved for the entire valley, and upon the splendid conception which he formed in the early days as to its future development and destiny, there can be no doubt that wherever this Association may meet, there should the memory of Drake be cherished.

The census of 1790, two years after his family came to Kentucky, gave the population of the United States as 3,929,214. Of the many States which now must be included in the great Central Valley, only Kentucky and Tennessee are there mentioned, with an aggregate population of 109,368, or 2.7 per cent. of the whole, and the center of population was twenty-three miles east of Baltimore; in 1800, the year in which he began to study medicine at the age of 15 in the town of Cincinnati, which did not then contain more than 500 inhabitants, the census gives the total population of the country as 5,308,483, and that of the Central Valley (comprising Kentucky, Tennessee, Ohio, Indiana and Mississippi) as 386,413, or 7.2 per cent. of the whole, and the center of population was eighteen miles west of Baltimore; while in 1895 the estimated population<sup>1</sup> of the country is 69,212,057, and the population of the great Central Valley, including eighteen States, is 29,614,304, or about 43 per cent., and the center of popula-

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<sup>1</sup> According to an estimate made for the World Almanac of 1895, by the Governors of the States and Territories.

tion is about Columbus, Ind., a westward movement of 525 miles in one hundred years. From an early age the tremendous magnitude of the physical and sociological features of the interior valley of North America, including the Canadian portion, impressed the imagination of Drake with overwhelming force. This vast stretch of territory beginning within the tropics and terminating within the Polar circle, and bounded laterally by the Appalachian Mountains on the East and on the West by the Rocky Mountains, embraces over 5,000,000 square miles—the northern part alone being rendered unavailable by the state of its surface and climate. Even that part belonging to the United States and which may be strictly called the Mississippi Valley amounts to 1,244,000 miles. To the clear vision of Drake, this valley presented itself as the last crucible into which living materials in great and diversified streams could be poured for amalgamation. The commingling of races upon a scale such as the world has never elsewhere witnessed could not fail in the end to give a new physiological and psychological development. No man could have less than Drake of the exuberant national spirit which made Elijah Pogram so great a terror to the effete civilizations of Europe. When Drake expressed his conviction that the vast homogeneous population which would eventually fill the interior valley of North America would present the last and greatest development of society, the opinion was based, not on the surpassing natural advantages of the territory, but upon his faith in the physical and social perfectibility of the race when it should attain its growth under conditions of civil and religious liberty. The contemplation of this great vision filled him with a passionate desire as a philanthropist and social reformer, that at the earliest day the foundations of education and of charity should be laid deep and strong there, so that the mighty tide of promiscuous immigration which was rising rapidly should have a saving element infused at once. Again he foresaw,



as a natural philosopher, the immense importance of securing in the early days of the settlement of the valley, an accurate account of its topography, and of the climate, the flora and the fauna; and parallel with this, an account of the physical condition and habits of life of the pioneers. Lastly, as a medical philosopher, he recognized early the absolute necessity of a wide-spread enforcement of public and private hygiene, and of radical measures for the elevation of medical education.

When we consider the achievements of Drake in each of these three difficult fields of labor, we marvel at the courage, the ability and the unsparing ceaseless activity displayed.

Throughout his life he was intensely interested in public affairs. Intimately associated with many of the most eminent men of the country, he threw himself with ardor into the great political questions of the day, and in his speeches and writings evinced a pure and lofty patriotism. His repeated journeys up and down the Mississippi Valley had resulted in an equal love and respect for the North and the South. Later, in 1851, this expressed itself in a series of remarkable letters to Dr. John C. Warren of Boston, on the slavery question, in which he insisted that a marked amelioration in the condition of the slaves had occurred under his own observation, and advocated the restriction of slavery to the States then holding slaves, and that emancipation should be coupled with colonization in Africa.

When only 30 years of age, he published a notable work, entitled, "A Picture of Cincinnati," which attracted wide-spread attention both in America and abroad; and in this he began to urge extensive internal improvements, and then made the first public suggestion of almost all the canals which have since been constructed in this region. In 1833 he advocated warmly, and acted as chairman of a special commission of three, to promote the construction of a railway which should connect the Ohio River at

Cincinnati with the Atlantic at Charleston. It was not on commercial grounds he urged it, but because he believed it would tend to efface sectional hostility if the North and South should thus pledge themselves to common national interests. He was largely instrumental in founding the Free Library in Cincinnati. He organized the Cincinnati College, which according to his design was to embrace the features of a fully developed university, while its medical school and hospital in an especial sense owe their existence to him. The Museum of Science and Art was another of his creations. He labored hard for these institutions; he secured legislative grants in their favor; he personally solicited funds for their endowment and support. It is probably unnecessary to state that he was treated with injustice and ingratitude, for such is the almost inevitable reward of true benefactors. Such treatment never discouraged him. His ambition was for the cause and not for himself; and he never lost, until the very end, his enthusiasm for humanity and his zeal in the service of the community. Truly did the great and wise Gross speak of him as equally eminent as a patriot, a philanthropist and a medical author. The eloquent Charles D. Meigs, in delivering the biographical address on Drake at the College of Physicians of Philadelphia, spoke of him as "a man of great and merited reputation, which extended even to the outer boundaries of the republic of medical letters, while as a citizen he reflected honor on his country, so that his name is destined to be reverently pronounced wherever the medical biography and history of America shall hereafter become known."

But I must hasten to speak of the colossal work to which Drake devoted the greater part of his life. I have told you that from his earliest years the future importance of the great Central Valley of North America impressed itself indelibly upon him. He became a geologist and an archæologist in his study of the formations through which the Mississippi forces

its way to the Gulf. His early familiarity with the forest and the fields led naturally to a profound study of botany, in which branch of science he became a high authority. He mastered the science of meteorology and enriched it by numerous accurate and original observations. He collected the materials upon which his descriptions and conclusions are based, by personal exploration of the entire valley from the Gulf to Lake Superior and from the Alleghenies to the Rockies, in the course of which he traveled over 30,000 miles. He visited hundreds of medical men along the valley, and actually instituted the earliest collective investigation with which I am acquainted, by issuing series of circulars to all the physicians of that region, soliciting their coöperation in securing the data desired. It was over thirty years after the first announcement of the work that the first volume was published; the second volume did not appear until nearly two years after the death of the author in 1852.<sup>2</sup> Drake dedicated his work to the physicians of the Interior Valley of North America, and, with habitual modesty, styled it "An imperfect attempt to lay an extended foundation for a history of its diseases." A careful and critical perusal of the 1,700 pages of this monumental work will convince you that Drake was true to the principle announced in the preface, "that he who would observe correctly must have no theories either to maintain or destroy." As stated by him, the theory that the geological, hydrographical, topographical, climatic, social and physiological conditions of communities must affect their medical histories; and that where different communities differ widely in one or several of these conditions, a corresponding diversity must appear in the respective histories of all the diseases which admit of modification from causes referable to those heads

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<sup>2</sup> I may call attention to the fact that the first 186 pages of the second volume are a reprint of the last 164 of the first volume. This was in all probability intentional on the part of the able editors, since it enabled the second volume to open at the beginning of the discussion of Febrile Diseases.



will not be disputed. It may readily be pushed to extremes; but the task which Drake assumed was to portray these conditions as they existed in the early part of the nineteenth century in this great valley, and then to furnish an accurate account of the diseases therein prevalent. Faithful to this duty, he ascended the streams to their mountain sources, or descended them to the sea at points exceedingly distant from each other. His masterly statement of the contrast between the medical relations of the Mississippi, the river of latitudes, and the St. Lawrence, the river of longitudes, may be referred to as an excellent example of his method.

The accumulation of facts is simply prodigious; the style is clear and admirably adapted to the subject; while the obvious sincerity of purpose and the philosophical breadth of view impress you with a sense of the permanent value of the work.<sup>3</sup>

It is easy, in the light of our more accurate diagnosis and pathology, to point to serious mistakes. The most important of these is the failure to admit the distinct individuality of typhoid fever, which had then recently been demonstrated by Gerhard and Pennock. Nevertheless the existence of severe outbreaks of typhoid at many points of the valley, and in different years, is clearly established by the excellent accounts furnished of the symptoms and course of the disease, and of the lesions

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<sup>3</sup> In regard to Drake's great work, the Standing Committee on Medical Literature of the AMERICAN MEDICAL ASSOCIATION reported at its third annual meeting, held in Cincinnati in May, 1850, concerning the first volume as follows:

"This volume, which contains nearly nine hundred pages, is taken up with the medical topography, the climate, the manners of the inhabitants, and the autumnal fevers of this vast region. Owing to the late period of its publication, the committee have been unable to examine the treatise thoroughly, and they might, therefore, rest contented with a bare announcement of its existence. But they are reluctant to do so, since even a superficial inspection of the work has convinced them that it belongs to the very highest rank of our medical literature, and may very probably come to be regarded as the most valuable original work yet published in America. It is certainly unrivaled in the amount and variety of its materials; its style is perspicuous, correct and elevated; and it appears to have been elaborated with great industry and care. Its distinguished author has raised a durable monument to his own name, and to the medical reputation, not only of the great valley but of the greater Union."

found in fatal cases. These accounts should be referred to with care by those who are now meeting with typhoid fever in the same localities, but under widely different local conditions. How far there may be actual variations in the disease as found in the Interior Valley, in the Atlantic States, and in Europe, is still open to discussion; and Drake's chapters are an important contribution to the study. The flora and fauna certainly present wide differences at different sections of the valley. It seems improbable that microorganisms should be exempt from the influence of climate and environment. It will not seem strange if shown that certain species of bacillus acquire at different latitudes, and in different soils, widely different degrees of growth and pathogenic virulence. There is considerable evidence in favor of the view that the *bacillus communis coli*, for instance, may from contact with certain organic matter, fecal or not, acquire the properties of the so-called *bacillus of Eberth*. Bacteriology is not ready as yet to dogmatize on such points. It is probable that we must take into account not only the susceptibility of the system (the soil) and the number of bacilli implanted (the dose of infection) but the virulence of the particular specimens of the bacillus present.

If I were to draw any inferences from Drake's description as to the relation between the typhoid he saw and that which we meet with to-day in the Middle Atlantic States, I should say that there were many more cases without eruption, while on the other hand grave nervous symptoms, hyperpyrexia, malarial complications and primary pneumonic lesions were unusually frequent.

Drake had arrived at a belief in the microbic nature of malaria, yellow fever and typhoid fever, as early as 1832, though of course his opinion was based purely on theoretical grounds. He states specifically that he had not seen the ingenious work of the elder John K. Mitchell until the year 1850; and hastens to make acknowledgment of the almost irresistible

array of facts adduced by the latter distinguished author.

He anticipated Woodward in the attempt to establish the existence of a *tertium quid* formed by the blending of typhoid and malarial infection. It seems to be an easy thing to fall into this mistake when one is dealing with typhoid and malarial fevers simultaneously on a large scale. The occurrence of a malarial complication of typhoid, and of a typhoid state in malarial fevers, is familiar; and it may be possible that the co-existence of the two microbes may so modify the blood and tissues as to influence the toxin and antitoxin developed and the consequent phenomena of the disease; but the accounts furnished by Drake, just as the later and more elaborate descriptions by Woodward, fail to convince that such modifications go far enough to constitute a specific difference which would justify the creation of another species of fever.

Malaria, indeed, was the bane of the Interior Valley in those days; and I doubt if any one has enjoyed such opportunities as did Drake for studying all of its manifestations. Almost every page of his great work attests its prevalence; from the Gulf of Mexico up to the 47th degree of latitude (beyond which it became very rare); on the low and ill-drained lands near the rivers, and, though in less virulent form, throughout the Bluff zone and back into the hilly regions; and over the Lake region, including extensive portions of New York State.<sup>4</sup> Even at the elevation of 600 or 1,000 feet, malarial fevers were of frequent occurrence; and when extensive disturbance of the surface of the soil was made, virulent outbreaks were to be feared. The distinguished French traveler, Volney, wrote that in a journey of 250 miles from Cincinnati to Detroit, begun on Sept. 8, 1796, in a company of twenty-five persons, they did not encamp one night without one at least of the party being seized with a

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<sup>4</sup> The swamps of the Chautauque (sic) Summit in New York at an elevation of 1,400 feet were innocuous.



periodical fever. On arriving in Detroit only three of the party were in health, and on the ensuing day the Commander, Major Swan and himself, were seized with a malignant fever.

On the lower reaches of the valley there were places where malaria was so pernicious and the sanitary conditions so shocking that we can not criticise Dickens for the harrowing account he published in "Martin Chuzzlewit" in 1843. Drake describes a town which was projected under the name of Florida, but which may well have been the original of that most misnamed Eden to which young Martin and the faithful Mark Tapley were lured by the wiles of land agents. It was at the estuary of the Escambia River, where the silt brought down by that stream had generated a marsh several miles in width, while the pine lands, which usually conferred immunity, lay to the leeward. In 1766, sixteen French Protestant families, consisting of sixty persons, were sent at the expense of the English government to this deadly spot. When the hot months arrived, all but fourteen perished; and the survivors lingered only a few months longer with shattered constitutions. In spite of this, many years later, in 1832, a new town was laid off to be called Florida; and between twenty and thirty wooden houses were built and tenanted by as many families. Their history, says Drake, may be told in a few words. Year after year they were assailed by autumnal fevers of the most malignant character; the spot was at last called a graveyard; and being abandoned by those who survived, I found, on passing through in 1843, but two families remaining.

"Do you consider this a swamp, Sir?" inquired Chollop gravely of Mark Tapley at Eden.

"Why yes, Sir," returned Mark, "I haven't a doubt about it."

"The sentiment is quite European," said the Major, "and does not surprise me. What would your English millions say to such a swamp in England, Sir?"

"They would say it was an uncommon nasty one, I should think," said Mark, "and that they would rather be inoculated for fever in some other way."

"European," remarked Chollop, with sardonic pity. "Quite European."

It was just such swamps as that of Eden which abounded formerly in many of the counties of England, and the medical literature of England in the last century teemed with discussions of the resulting malaria. Just as drainage and cultivation have almost eradicated it there, so did Drake and every intelligent observer know that the same agencies would inevitably banish malaria in large degree from our great Interior Valley. How swiftly this good work would progress under the vast immigration of the ensuing fifty years, not even Drake in his most sanguine moments would have ventured to predict. Meanwhile, it was the great cause of mortality or infirmity of constitution, especially in the southern portions of the valley; and the medical practice of the entire region was powerfully influenced by the views entertained regarding its nature.

I am aware that some of Drake's contemporaries, possibly influenced by envy of his national fame and great authority, insinuated that he was a mere theorist and speculator, and a reckless practitioner. Dr. Gross, who had the best opportunities of knowing him and his practical ability, gave this testimony: "I had great confidence in his professional acumen. I saw enough of him in the sick chamber to satisfy me he had a most minute and thorough knowledge of disease and of the application of remedial agents. There was no one whom I would rather have trusted in my own case, or in that of a member of my family." No additional testimony, however, is needed by any one who will carefully study his own writings. Everywhere is manifest the accurate observer, the clear-headed thinker, the practical man who can not be led by mere authority and who will not lapse into routine. The truth is that Drake was ahead of his time—at

least of that time in his region—as much in his practice as he was in other things. When he first began the study of medicine with Dr. Goforth, of Cincinnati, at the age of 15 years, he showed so much ability that in four years he was admitted to partnership. He was thus engaged in practice, not only without a diploma but without ever having listened to a single lecture, for over a year, when he scraped together enough money to go to Philadelphia and take a course of lectures at the University of Pennsylvania. Before leaving Cincinnati, his instructor and partner, Goforth, presented him with an autograph diploma, setting forth Drake's ample attainments in all the branches of the profession. This was the sole pretense of a license to practice which he possessed until his second visit to Philadelphia, eleven years later, in 1816, when he received his diploma at a special Commencement held purposely for him on May 11, more than a month after the occurrence of the regular Commencement.<sup>5</sup> He was powerfully impressed with the brilliancy of Rush's lectures. He had, even as a lad, conceived a high admiration for the genius of this great teacher from the study of his writings; but his practical sagacity led him to modify the doctrines in accordance with the results of his own observations, instead of carrying them blindly to an extreme length as was done by only too many.

We can well understand the mortality that attended all fevers, when we read in Drake's reports of the practice of his contemporaries, that for the gastric complications many physicians gave calomel

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<sup>5</sup> A full explanation of this singular and highly complimentary occurrence is given in Dr. Meigs' interesting biographical notice of Drake (Trans. Coll. Phys. of Phila., 1893) in the form of a letter from Dr. Joseph Carson, the Dean of the Medical Faculty of the University. It appears that Dr. Drake submitted his thesis, at the close of the session, and left the city with the understanding that he should be notified in time to be examined and to receive his degree. The letter did not reach him and he returned to Philadelphia the day after Commencement. "Under these circumstances the Professors, considering the high literary accomplishments of Mr. Drake, the value of his late publication, his present eminence and future promise . . . examined him on April 30 and recommended him to the Board of Trustees for the special mandamus which was granted at the Commencement held as has been stated."



in doses of a scruple or a drachm at short intervals; that even doses of half an ounce, an ounce, or an ounce and a half several times a day were far from rare; that these doses were sometimes given to load down the irritable stomach and by their actual weight to prevent vomiting; that multitudes believed that when they did not obtain bilious discharges by ounce doses, it was because they were too timid in its administration; that in some cases even so much as a pound or a pound and a half were administered to a single patient. He quotes from the letter of a physician in Louisiana who wrote with playful hyperbole that in a recent epidemic, "he had drawn enough blood to float, and had given enough calomel to freight, the steamer *General Jackson*."

Against this drastic and murderous practice, Drake exerted all his influence. He urged the external use of cool water in fevers to reduce excessive temperature; he rapidly came to advocate an expectant method of treatment conjoined with scrupulous attention to all hygienic details, because he found all special methods unsatisfactory. When we look around us to-day and witness the eminent schools of medical science in these Central States; the numerous distinguished practitioners, teachers and authors; the original publications of high scientific and practical value, we are amazed at the speed with which the medical profession here has advanced to a position of well organized and commanding strength. It is easy for you to-day to advocate prolongation and elevation of medical studies; to insist upon the adoption of rational methods of treatment; to secure substantial aid in the prosecution of scientific investigation. Let us never despise the day of little things. All the more should we honor those who were the pioneers in this wonderful march of progress; and who held aloft the standard of scientific truth and professional dignity under the most difficult conditions. Well do I remember the feeling words in which my revered friend, the late Samuel Freeman Miller (whose services in the

cause of constitutional liberty rendered during so many critical years as Associate Justice of the United States Supreme Court place him in the rank with the immortal Marshall), spoke to me of the causes which led him to abandon medical practice and begin the study of law. He graduated at the Medical Department of Transylvania University, in 1838; but soon found the difference between the theory as taught and the practice as established in Kentucky so glaring, and the difficulty of securing a chance for more rational measures so insuperable that he was wretchedly unhappy. Drake felt these difficulties keenly, but his enthusiasm carried him through. When he was only 21 years of age he used cold affusions in a case of fever; the friends protested, and Drake called in consultation an old and respectable physician who highly approved the affusions, but said it was too hazardous to a physician's reputation and therefore should not be employed. "This advice," continued Drake, "contained something which we are all sufficiently predisposed to lay hold of. I accordingly adopted it, and have had repeated occasions for dissatisfaction ever since. The event of some severe cases of fever in the summer of 1812 determined me to revert to the disinterested and magnanimous views and motives of youth, and also to prescribe and enforce, in all dangerous cases, anything which I believed necessary, the antipathies of the sick and the obloquy of the intermeddling notwithstanding." I am sure that every one of us has been forced to face the same temptation; and it is well for us if we have shown the righteous determination of Drake. It is certainly not the least of Brandt's claims to our gratitude that while others before him had recognized the advantages of hydrotherapy in fevers, he alone insisted upon it so strenuously and repeatedly and with such impressive marshalling of facts, that at last a reluctant world was compelled to give heed.

I may not now enter into any extended discussion of this ever interesting question. My object has been

to show that Drake was a leader in this respect also. He appreciated the external use of cold water in fevers, in the phlegmasiæ, and as a means of rousing reaction in collapse. He quotes from the practice of a number of his correspondents to show that hydrotherapy made some headway in his time. The difficulties attending its thorough introduction into private practice have always been too great, however, for the average man to overcome; and all of us know that only of recent years and under the teaching of Brandt, of Jurgensen, and of Liebermeister has it secured general adoption. In fact, even at the present day, this curious anomaly exists, that in nearly all hospitals thorough hydrotherapy is used in fevers, and in many of them the rigid Brandt method is applied as an unvarying, and therefore unphilosophical routine; while in private practice I fear there are comparatively few medical men who insist upon cool bathing, even when it is urgently indicated.

If any rigid routine treatment of typhoid fever is to be used, the statistics leave no room for doubt that the Brandt method has yielded a larger percentage of recoveries than any other. The problem is still unsolved, however, whether the restriction of this method to certain groups of cases, and the employment of other methods in cases of different type, may not still further reduce the mortality. To this conclusion I believe we shall come at last. It is the opinion which some of the ablest clinicians are reaching. When we meet with such figures as the following, which give the results of the strict Brandt method in typhoid fever in the German Hospital of Philadelphia for five years, and show during 1890-91-92, 292 cases with 16 deaths, or a mortality of 5.5 per cent., while during 1893-94 there were 152 cases with 24 deaths, or over 15 per cent. mortality, it is difficult to avoid the conclusion that some of those who died might have fared better under another mode of treatment.

We may be assured that hydrotherapy, like every



other powerful remedy at our disposal, must be used with strict regard to the peculiarities of each case; and that extended observation will show it can not be employed in a rigid routine method in any disease, and especially in so complex a disease as typhoid fever, with the attainment of the best results practicable. I am convinced, for instance, that it is a grievous mistake to omit the use, in conjunction with hydrotherapy, of some suitable remedy adapted to the state of the affected mucous membrane, and to the septic condition of the intestinal canal. I doubt not that others have learned to use various remedies for this purpose with good results; as for myself, I must state that for so many years I have used nitrate of silver in every case of typhoid fever under my care, and with such apparent benefit, that I greatly prefer it to all other intestinal antiseptics; for, indeed, as you well know, it possesses extremely high antiseptic power, in addition to its remarkable local action on the mucous membrane.

I wish I might dwell at length on the admirable instructions of Drake as to the hygienic treatment of fevers; but this was but natural in one who saw more clearly than any one of his time, so far as I know, the supreme importance of hygiene both in preventive and remedial medicine.

Each age has its Jeremiahs, who lament the degeneracy of the time. It is possible that Nordau, who is the latest, is also the most learned and ingenious of these apostles of pessimism. But it is easy to make out a strong case by collecting data which support a certain view and excluding all which are opposed. His book, which has had the vogue of a popular novel, will be scarcely more long-lived or influential. It is a poor business to oppose mere assertion to elaborate argument, as I am doing; but I have such deep and unchanging faith in the improvement, physical, intellectual and moral, of the race, that I can not let pass unchallenged what seem to me the specious and unsubstantial arguments of the pessi-

mists. Thirty years ago many people were comfortably settled in their conviction that the attempt to establish on this continent an enduring, vigorous, native-born race was doomed to failure. The American climate was to prove too much for us; and those who survived the climate were to succumb to the enervating effects of luxury, or to fall in the deadly struggle for the almighty dollar. We can afford to laugh at these predictions now, when we see the splendid physique of the men and women of the rising generations; when we see the triumphant advance of our industrial and commercial position; when we see the development of a vigorous literary, scientific and artistic activity; when we see a progress in the wise and enlightened use of wealth which extorts the admiration of the world; and when we see our beloved institutions standing the stress of every storm and adapting themselves more and more marvelously to the growth of a community of 70,000,000 peaceful and prosperous freemen.

But in Drake's day the peculiarities of the climate were little heeded; the dress, especially of women and children, was usually unsuitable; athletic exercises were almost unknown; the excessive use of spirits and of tobacco was conspicuously frequent. Many of the early settlers brought with them the habits of life acquired in comparatively equable climates; it is needless to say they suffered from the sudden and violent changes here. Drake called attention to the obvious fact that the great Central Valley, lying between one of the hottest and one of the coldest seas of the globe, must forever be subject to sudden vicissitudes and wide extremes of temperature. He cited as examples of such extremes a yearly range of  $117^{\circ}$  at Cincinnati; of  $126^{\circ}$  at Montreal; of  $134^{\circ}$  at St. Louis. We have learned not only that these changes can be anticipated, but that with intelligent care their effects can be readily tolerated.

The most depressing feature of those early days is the fact that so little physical exercise was taken by

young people of either sex. Says Drake: "A walk of a single mile is regarded as an enterprise to be remembered with self-complacency; and if, under necessity, extended to twice that distance, a hardship to be recounted for the purpose of exciting sympathy." If hard labor and exposure generate a few diseases, want of exercise and recreation is the remote cause of a far greater number; and the above account of the attitude of our people toward exercise, before the era of athletic sports opened, was applicable to the entire continent. To this lamentable absence of proper physical training, and to the effect of a climate which renders this training preëminently necessary to increase our resisting power, there were added the evil results of yet another national peculiarity, the universal prevalence of bad cookery and neglected mastication. Drake says: "The practice of rapid eating is universal among us; that is, it prevails everywhere, though not adopted by every individual; the food is imperfectly masticated, and too much is taken." You will all remember Dickens' excruciatingly funny account of the dinner at Mrs. Pawkins' boarding house in New York, where dyspeptic individuals bolted their food in wedges, feeding not themselves but broods of nightmares, who were continually standing at livery within them; where the fowls disappeared as rapidly as if every bird had had the use of its wings and had flown in desperation down a human throat; where the sharpest pickles vanished, whole cucumbers at once, like sugar plums, and no man winked his eye; and spare men, with lank and rigid cheeks, came out unsatisfied from the destruction of heavy dishes, and glared with watchful eyes upon the pastry. Allowing for the exaggeration pardonable in the courteous visitor who accepts our hospitality in order to write his book of travel at our expense, there was much unpalatable truth in the account. It did not need the prevalent malaria, inevitable in a new and fertile country, nor the damp, ill-ventilated dwellings that were only



too frequent, to explain the prevalence of catarrh and anemia and defective nutrition, where such grave faults of personal hygiene were ignorantly practiced by the great majority. The same lesson has been learned here as in all parts of the world, that it is easy to overestimate the influence of climate, and that strict attention to the details of hygiene will insure a gradual attainment of high physical vigor even under adverse conditions. We have seen malaria diminish steadily and rapidly, and we shall see the prevalence of catarrh, with its vile habit of expectoration and its defective articulation, become a thing of the past, just as we are witnessing the replacement of the anemic light-weights of former generations by the most vigorous lads and lasses in the world. It has been my good fortune to be able for over thirty years to study on a large scale the physical and mental and moral conditions of the young people of America. I have no fear of contradiction on the part of any competent authority when I assert that these conditions have all changed decidedly for the better, and I venture the opinion that the improvement has corresponded to, and has been largely dependent upon, the specially conspicuous advance in their health.

No one of Drake's claims to the gratitude of posterity seems to me greater than that which is based upon his services to hygiene. When all around him were indifferent to it, he was unswerving in its advocacy. In one of his latest utterances, an address before the Medical Library Association of Cincinnati, in 1852, he thus bemoans the premature death of a large proportion of his medical contemporaries—then as now, often among the violators of the laws of health: "It is truly a sad thing that in the United States the progress of civilization and science shall so violate the laws of health as to shorten the lives of those who are laboring to promote it. I beseech you, gentlemen, to turn your minds to the correction of the errors of hygiene and education which lead to this melancholy result."

If space permitted, it would be well to show how rational and judicious were his views on the subject of phthisis, then already recognized as the scourge most to be dreaded in this country. The relation between the frequency of phthisis and ill-drained soil and damp and poorly ventilated buildings, subsequently worked out for Massachusetts by Dr. H. I. Bowditch in a masterly manner, was clear to him; he recognized its infectiousness; he had learned that the main hope of averting its development or of checking its progress is to be found in careful hygiene; and he advocated strongly that phthisical patients should seek a residence in dry, cool and elevated regions.

On estimating the influence which Drake exerted upon contemporary thought on these great questions, we must remember the exceptional opportunities he enjoyed for reaching the ear of the public, as well as of the profession. For many years his house was more resorted to by distinguished visitors than any other in the cities where he resided. He was the chosen orator on nearly all important public occasions—whether in the cause of temperance, of charity, of education, or of large public improvements. He founded the first medical journal in the interior valley in 1822. He was one of the founders of the Cincinnati College of Teachers, and some of his ablest addresses were delivered before that body. Somewhat after the example of the distinguished Caspar Wistar, of Philadelphia, he encouraged meetings of a literary and scientific character at his house on a stated evening of each week. But undoubtedly the work into which Drake threw himself with the greatest ardor, next to the preparation of his *magnum opus* on the "Diseases of the Interior Valley," was that of medical education.

Of his merits as a teacher, it suffices to quote Professor Gross' assertion: "Of all the medical teachers I have ever heard, he was the most forcible and eloquent." And as to the appreciation in which he was

held throughout America, it will surely suffice to state that beginning with his first call to a professorship at Lexington, Ky., at the age of 31 years, he received no less than thirteen calls to professorial chairs, and he actually occupied nine separate chairs in five distinct institutions. These institutions were Transylvania College, in Lexington, Ky., where he held two different chairs at different times; the Medical College of Ohio, of which he was the founder in 1819, and where he was elected a professor no less than three times; the Jefferson Medical College, at Philadelphia, where he filled the chair of the institutes and practice for one year; the Medical Department of Cincinnati College, which he organized in 1835; and the Medical Institute of Louisville, Ky., with which he was connected at two separate periods. Naturally, these frequent changes have seemed to require explanation; nor is the explanation difficult to furnish. It was certainly not from any lack of ability nor from any want of popularity with medical students. Gross, who was his colleague in two distinct faculties, declares that when he came to the Jefferson College he was the most popular professor in the institution long before the close of the session. Eloquence such as his, ready and off-hand, had not fallen from the lips of any teacher since the days of Rush. It may be asserted that each and every institution with which Drake was so connected enjoyed exceptional prosperity while he was in the faculty, and in most instances there was a marked reduction in the size of the classes immediately consequent upon his withdrawal. I have no doubt myself that his conduct was governed by lofty motives, and that each step was dictated by his intense desire to elevate the standard of medical education in the great interior valley, to the interest of which he had dedicated his entire life and powers. Professor Meigs, who knew the facts, states explicitly that Dr. Drake accepted the chair of medicine in the Jefferson College with the express understanding that he should hold it for



only one season, when he intended to return to Cincinnati to establish a Medical Department of the Miami University. He was essentially a leader and a pioneer. Of the other medical schools with which he was connected, he was either in whole or in part the founder and organizer. In all he strove earnestly for the adoption of a higher standard and for stricter methods than were approved. In each case he promptly sacrificed his personal feelings and interests, so soon as it appeared that the conditions were not favorable to honest and thorough education. No more uncompromising foe existed to ignorance, and to dishonesty and shams of all sorts. Persevering study, unswerving application, steady, hard work, had done great things for himself; he believed in them for all. He was an eloquent advocate of the public school system, and urged that compulsory education in certain branches (including physiology and anatomy) is in strict accordance with the spirit of our institutions, and the most certain means of perpetuating them.

In 1832 he issued a little volume of practical essays on medical education—which I would gladly see reprinted and placed to-day in the hands of every medical man in the country. It is literally true that not one of the evils from which the profession has so sorely suffered since is overlooked, and not one of the remedial measures which we have striven to secure and apply is not brought forward and advocated. He points out with the unsparing finger of truth, the defects in the preparatory education of a majority of medical men. He denounces the wrong done by the reckless competition of needlessly numerous medical schools, wholly unendowed, and conducted far too largely in the personal interests of their faculties. He insists with caustic force upon the flagrant inadequacy of the curriculum then required, which covered two sessions of a little over four months in successive years, or even in a single year; and asserts that even three years of actual

study with longer sessions is too short; that four years should be rendered indispensable, and that the regular course should be supplemented by summer lectures on auxiliary sciences. He demands that the didactic element in teaching shall be subordinated to such practical training as will develop the power of accurate observation. And finally he insists "that medical schools shall be placed under the supervision of the law, and thus rendered amenable to the sovereign power of the State; and further, that medical professorships shall be regarded as public offices, which are to be filled or made vacant for no other motive than the general good."

It is thus I would present to your consideration this noble-minded man, filled with the enthusiasm of genius and of devotion to humanity, and consecrated to the true interests of society and of medical science. He was decades ahead of his time. It must have been bitter to him to note that in the ensuing twenty years, from 1832 to 1852, the date of his death, there were no fewer than fifty-three medical schools organized in the United States. It would have been more bitter to him to know that the degradation of medical education was to continue unabated until even the possession of an American diploma should become an opprobrium in foreign lands. But it is not necessary, thank Heaven, to fight over again the battle for higher medical education. It is true that the morbid process of multiplying medical schools has gone forward even more virulently than before; between 1853 and 1872 inclusive, sixty-one were organized; and from 1873 to 1890, only seventeen years, no fewer than 114 medical schools were established. The proportion of medical schools to population in other countries has varied little since the tables I published in 1876.<sup>6</sup> Russia has 1 school to 14,000,000 people; Brazil 1 to 7,000,000; Austria and France each average 1 to between 5,000,000 or 6,000,000; Ger-

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<sup>6</sup> Higher Medical Education, p. 9, 46, *et al.* Two addresses delivered before the Medical Department of the University of Pennsylvania, published by J. B. Lippincott Co., 1894.

many and Great Britain 1 to 2,500,000; but the United States, which in 1876 had 1 medical school to every 477,392 of her population, can now boast that in 1890 the ratio has risen to 1 in every 440,151. But, nevertheless, the battle for higher medical education has been fought and won. The profession has set the seal of lasting approbation upon those great schools which have had the courage to enforce the needed reforms; to exact a serious preparatory examination; to lengthen the period of collegiate studies to four full years; to insist upon careful grading of the courses, and upon ample practical instruction of each student both at the bedside and in laboratories; and to establish salaries for the professors so as to lessen their pecuniary interest in the size of their classes. Professional opinion has also demanded, with the cordial concurrence of the leading schools, that State Boards of Examiners shall exist in every State, so that the questionable custom shall cease of having the qualifications of candidates for the license to practice decided solely by the men who have taught them, and who are interested in their success. Not only has the profession contributed its indispensable and invincible support to the great pioneer schools in this movement, but the public has shown its appreciation by beginning to contribute to their endowment and by insuring ready and brilliant success to their graduates. The callow brood of half-fledged schools, with poor equipment and meager clinical facilities, must accept the useful but less ambitious duty of providing preparatory training in the non-practical branches to fit students for entering the stronger institutions for their advanced work and final degree.

This law of development is already so manifest that we may cease to distress ourselves about the continuing low standard of many of our weak schools. Let us address ourselves all the more courageously to the great objects so clearly in sight; to the further strengthening of the strong schools until, in endow-



ment and equipment and facilities, they not only equal but surpass, if possible, the greatest schools of Europe; to strengthening the hands of the State Boards so that their examination shall actually demand a thorough and adequate education; to insistence upon such legislation in each State as shall stop the issue of charters save to creditable persons who shall give evidence of actual resources sufficient to establish the proposed school upon a strong and permanent basis. Let us go one step further and demand, in the name of the vast interests devolving upon the medical profession, of the assured advances already made in hygiene and medicine, of the absolute necessity for concerted and authoritative action in dealing with the problems which now confront us, and which affect the happiness and prosperity and safety and life of every inhabitant of this country—let us demand, and let us persist in our united enforcement of the demand, that there shall be granted national recognition of preventive medicine, with a proper representation in the government at Washington.

What joy unalloyed would such a meeting as this have given Drake! To see his most glowing dreams more than realized; to see such a gathering, representative of the entire country, in his beloved valley—drawn there not by its great natural attractions, not by the splendid prosperity of its cities, Detroit, Cincinnati, Louisville, St. Louis, Chicago, and a score of others; but chiefly by brotherly affection for her medical men and by admiration of her great schools which have so bravely and so successfully fought in the vanguard for the elevation of medical education and for the dignity and purity of the profession.

The great Mississippi waterway, which extends over four thousand miles, instead of dividing, unites, and helps to weld into one, the great States between which it runs. From the mountains and highlands within its drainage area, it is now, as for ages past, carrying down to the Gulf, solid material at the rate of hundreds of millions of tons annually.<sup>7</sup> The lev-

eling down of the mountains is serving to fill up the Gulf, so that the delta of the Mississippi may in time extend to Yucatan. With equal certainty is the flood-tide of human life pouring into and through this valley, doing its mission. Ancient barriers of class prejudice and race hatred melt down; the East is blended with the West, and the North with the South. To-day we plan for an extension of our medical relations far to the southward, until we shall meet our brethren of the South American Republics. Already we have effected the organization of the Pan-American Medical Congress, which is the final expression of the consolidation of the profession of the entire continent. Our sister Republic of Mexico extends a cordial invitation to us to attend the second Congress in her capital in Christmas week, 1897. As chairman, *ex-officio*, of the Executive Committee of the Congress, I have the honor to announce this gratifying and courteous act. I am confident that all of us feel that the spirit of the times, the genius of this great region, the inevitable law of our national evolution, lead us strongly in that direction, and impose on us the duty of doing our full share to render that important meeting as brilliant a success as you have made of this delightful occasion.

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<sup>7</sup> Estimated at 362,000,000 tons a year, sufficient to make a square mile of new land, allowing for its having to fill up the Gulf to a depth of eighty yards.













